Department of
Environmental Protection

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Governor

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2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

October 4, 2002

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Rodney Williams, Plant Manager
New Hope Power Partnership
8001 U.S. Highway 27, South
South Bay, FL 33493

Re: **Request for Additional Information**
Project No. 0990332-016-AC (PSD-FL-196B)
New Hope Power Partnership - Plant Capacity Increase

Dear Mr. Williams:

On September 6, 2002, the Department received your application and sufficient fee for an air construction permit to increase the capacity of the Okeelanta Cogeneration Plant. The application is incomplete. In order to continue processing your application, the Department will need the additional information requested below. Should your response to any of the below items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. New Hope Power Partnership (NHPP) requests an increase in heat input from 715 MMBtu per hour to 760 MMBtu per hour. Please provide supporting information that this is within the manufacturer's maximum continuous rated capacity for the cogeneration boilers. What affect will this have on power generation given the current 74.9 MW plant capacity? From the application, it appears that the flue gas flow rate and velocity will increase. Based on actual data, what is the current flue gas flow rate and velocity?
2. NHPP requests that the total heat input restriction of $11.5 \times 10^{+06}$ MMBtu per year be removed. This limit established an annual capacity factor of approximately 58% for the plant. Palm Beach County was a nonattainment county for the pollutant ozone during the initial application. It appears that a determination of the Lowest Achievable Emission Rate (LAER) for emissions of volatile organic compounds was avoided by limiting the plant capacity. Why did the original application request a limit on heat input? Please comment and discuss.
3. Attachment NH-EU2-C: The "List of Applicable Regulations" in the application states that 40 CFR 60.46a(i) is "non-applicable". However, the units were recently modified to fire natural gas so the NSPS NOx limit specified in 40 CFR 60.44a(d) should apply. The attachment also lists Rules 62-296.405 (boiler > 250 MMBtu/hour) and 62-296.410 (carbonaceous fuel burning equipment) as "non-applicable". The Department disagrees and believes these are applicable requirements. Please comment.
4. Please provide the missing Attachment NH-FI-C3 (Process Flow Diagram).
5. The floor for a NOx BACT determination is established in Subpart Da, the New Source Performance Standards for electric generating steam units for which construction commenced after September 18, 1978. 40 CFR 60.44a(1) specifies a NOx standard of 1.6 lb/MW-hr gross energy output, based on a 30-day rolling average. (This regulation was revised on April 10, 2001.) Please verify that the requested NOx controls for the cogeneration boilers are capable of achieving this level of emissions.

6. Notwithstanding New Hope Power Partnership's preference, please provide each requested pollutant limit in terms of *ppmvd at 7% O2*, which is equivalent to the requested limits in terms of *lb/MMBtu* limit for each fuel.

7. NOx BACT Review

   a. Please provide a top-down BACT review for all NOx emissions control technologies ranked according to control effectiveness. In addition to SCR and SNCR, include other control options such as an SNCR/SCR hybrid system, combustion modifications, overfire air, reburn with natural gas, etc. Combinations of these technologies should also be explored. (Information provided by Hamon Research Cottrell's web site states that a hybrid SNCR/SCR system allows an easier retrofit requiring low catalyst volume resulting in low capital costs. Several of the other technologies were alluded to in the May 21st, 2002 EPRI presentation provided with the application. Combinations of technologies are briefly mentioned in the May 2002 DOE/NETL Pittsburgh Conference on SNCR and SCR, also provided with the application.)

   b. Table 2-3 lists the potential annual NOx emissions as 1498 tons per year from the three cogeneration boilers based on an SNCR-controlled emission factor 0.15 lb/MMBtu. Assuming a 40% reduction in NOx emissions from SNCR (the original design control efficiency), the uncontrolled NOx emission factor would be 0.25 lb/MMBtu. Table 5-3 uses an uncontrolled NOx emission factor of 0.26 lb/MMBtu and shows an estimated NOx reduction from SCR of 539 tons per year, based on a 90% capacity. The cost effectiveness calculation is based on a 70% control efficiency, but the vendor quote is based on a 90% control efficiency. The vendor quote also assumes an inlet exhaust of 210 ppmvd @ 15% O2, which appears to be much higher than 0.25 lb/MMBtu. Please explain the discrepancies and calculate the annual NOx reduction based upon the information provided to the vendor (inlet of 210 ppmvd @ 15% O2 and an outlet of 21 ppmvd @ 15% O2). Also, please assume full operation (8760 hours per year) as requested by NHPP.

   c. Was the vendor provided a detailed description of the existing NHPP cogeneration boilers including boiler design, existing control equipment, process flow diagrams, varying flue gas temperatures, fuels, exhaust characteristics and composition? If not, please provide the information and request a revised vendor cost quote.

   d. NHPP states that the SCR system would be placed after the ESP to prevent fouling from the particulate laden gas stream. Please provide supporting information from the vendor that justifies the very limited catalyst guarantee (10,000 hours) with placement of the SCR in cleaned flue gas after the existing ESP.

   e. NHPP states that it will be necessary to install a reheat system (100 MMBtu per hour) to raise the flue gas temperature into the proper operating range of the catalyst for the proposed SCR system. This results in a cost of more than $2.6 million, which is the bulk of the annual operating costs. Please provide additional information that supports: the need for a reheat system; the estimated size of the reheat system (100 MMBtu per hour); and the type of catalyst selected and its operating range. The SCR vendor states that SCR can be effective in an operating range of 400° F to over 1000° F depending on the catalyst used. Please provide supporting documentation of the actual flue gas exhaust temperatures at the boiler exhaust, the mechanical dust collectors (inlet/outlet) and the ESP (inlet/outlet).

   f. The vendor quote for SCR includes freight. Please revise cost effectiveness calculations accordingly.

   g. An ammonia cost of $580 per ton of aqueous ammonia appears very high. Available information suggests that actual ammonia costs will be less than $200 per ton of aqueous ammonia. Please provide supporting information and adjust the cost effectiveness estimate accordingly.

   h. Please provide information to support and justify the 25% contingency factor used to determine capital costs.

i. Information provided by Hamon Research Cottrell's web site suggests that boiler temperature mapping can be used to optimize the urea injection grid. Please provide a quote from the original equipment manufacturer (or Hamon Research Cottrell) to enhance the existing SNCR system for additional NOx control.

8. PM BACT Review

   a. Please provide a top-down BACT review for PM emissions ranked according to control effectiveness. Support statements regarding costs with vendor quotes and standard cost effectiveness analysis. Identify and include any enhancements to the existing ESP controls (additional fields, etc) that can be made to reduce the potential particulate matter increase of 181 tons per year.

   b. Please provide a cost estimate from the original ESP equipment manufacturer (or Southern Research Institute) for enhancing the existing ESP to provide an additional level of control.

   c. Please obtain a vendor cost quote for the "Compact Hybrid Particulate Collector (COHPAC)" system, which is a hybrid ESP/baghouse add on control system offered by Hamon Research Cottrell, Inc. According to their web site, a high air-to-cloth ratio fabric filter can be added to an existing ESP system to increase control efficiencies above 99.9%. This system could also be used as part of the spray dryer SO_2 scrubbing system. Please comment.

9. SO_2 BACT Review

   a. Please provide supporting information from the vendors that a baghouse would be necessary in addition to the existing ESP. Please provide a cost estimate from the original equipment manufacturer (or Southern Research Institute) for enhancing the existing ESP to provide this additional level of control.

   b. The additional fluorides that would be removed due to a scrubber were included in the emissions reductions and cost effectiveness calculations. Please include the additional particulate matter that would be removed with the baghouse.

   c. Please estimate the emissions of hydrochloric acid from the cogeneration boilers and include emissions reductions in the cost effectiveness calculations.

   d. The vendor quote for FGD includes freight. Please revise cost effectiveness calculations accordingly.

   e. Please provide information to support and justify the 25% contingency factor used to determine capital costs. Was the vendor provided a detailed description of the existing cogeneration boilers including design, existing control equipment, process flow diagrams, temperatures, fuels, exhaust characteristics and composition?

10. Revised Vendor Cost Quotes: For revised cost quotes, please provide the vendors with detailed descriptions of the existing plant, boilers, control equipment, fuels, configuration, flue gas characteristics, etc. Provide this information must with the revised cost quotes.

11. VOC Emissions: Based on test data, actual VOC emissions are less than 50 tons per year. As requested, the proposed project would result in potential VOC emissions of nearly 600 TPY.

    a. The net VOC emissions increase is above the 40 ton per year PSD significant emission rate. Please provide a top-down BACT analysis for the control of VOC emissions. Such analysis should include such options as charcoal filtration, activated carbon injection, and catalytic oxidation.

    b. The net VOC emissions increase is also above the 100 tons per year threshold, which requires an ambient impact analysis. Please discuss available options and techniques for addressing modeling concerns regarding VOC emissions and ozone impacts. Please contact Cleve Holladay at 850/921-8986 to discuss related modeling issues.

12. EPA and NPS: The Department is awaiting comment from EPA Region 4 and the NPS. We will forward any comments or requests for information submitted by these agencies as soon as possible.

The Department will resume processing your application after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. For any material changes to the application, please include a new certification statement by the authorized representative or responsible official. You are reminded that Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days or provide a written request for an additional period of time to submit the information.

If you have any questions regarding this matter, please call me at 850/921-9523 or Jeff Koerner at 850/921-9536.

Sincerely,

A. A. Linero, P.E. Administrator
New Source Review Section

AAL/jfk

cc: Mr. James Meriwether, New Hope Power Partnership
Mr. David Buff, Golder Associates Inc.
Mr. Ron Blackburn, SD
Mr. James Stormer, PBCHD
Ms. Jeanneane Gettle, EPA Region 4
Mr. John Bunyak, NPS